

## Bench Top pH Meter Type PH-016

### 1.) Specifications:

Range	PH	0.00 ~ 14.00
	mV	-1999 ~ 1999
	Temperature	0 °C ~ 100 °C
Resolution	PH	0.01 pH
	mV	1.0 mV
	Temperature	0.1 °C
Accuracy	pH	.01 pH
	mV	+/- 0.1% of the reading +/- 1 digit
	Temperature	+/- 0.4 °C

Input Resistance  $10^{12}$  ohm

### Calibration

- Single- point in neutral buffer solution
- Double-point in neutral buffer solution plus an acid or alkaline buffer solution
- Offset regulation range: +/- 1pH
- Slope from 85 to 105%
- The values indicated refer to a temperature of 25 °C.

### Temperature Compensation

- Completely Automatic with ATC probe
- When the probe is not installed the temperature setting is fixed at 20 °C and may be modified with by the internal trimmer.

### Display

- The unit has a 4 digit Liquid-Crystal Display

### Power Supply

- 110V 60Hz AC to DC wall adapter is included. 220V 50Hz AC to DC adapter is available.

### Operating Conditions

- Room Temperature from 0 °C to 50 °C
- Humidity to 95% (Max. RH)

### Dimensions

- 240x185x100mm (LxWxH)

### Weight

- Instrument only 660grams

### Contents

- pH Meter / Electrode / Temperature Probe / Wall Adapter / Calibration Buffer Solutions / Calibration Tool / Locking Case

## 2.) Front Panel

- On/Off – Used to switch the unit on and off. Note that there is an additional on/off switch on the back of this machine. Both must be switched on for the unit to function.
- pH – activates the pH measurement via the electrode
- mV – displays the mV value of the electrode.
- °C – indicates temperature value of probe (probe must be plugged in or unit defaults to factory setting). The temperature value is used by the internal circuits for pH measurement auto temperature compensation (ATC).

Two trimmers are located on the lower front panel for calibration and regulation of the unit.

## 3.) Electrode connection and power connection.

### Combined – Type Electrode:

Connect the removable electrode via it's BNC connector to the BNC jack on back of instrument.

### Temperature Probe:

Connect the temperature probe to the jack on back of instrument.

### Power Connector:

Connect 110V wall adapter to power source and back of instrument. Put the power switch to the "ON" position.

## 4.) pH Calibration

- Pour a small quantity of pH 6.86 (or pH 7.01) and 4.01 (or pH 9.18) solution into clean beakers.
- It is recommended to use 2 beakers for each buffer solution to avoid cross contamination during calibration. The first beaker is used to rinse the electrode; the second is used for the actual calibration. In this manner you reduce the risk of contaminating the buffer solutions and affecting your calibration accuracy. Do not mix the buffer solution used as a rinse back into your fresh solution.
- Switch on the instrument; press the pH key to display the pH measurement.
- Immerse the electrode and the temperature probe in the pH 6.86 rinse solution then the pH 6.86 (or pH 7.01) buffer solution and swirl the electrode briefly.
- Allow time for the reading to stabilize then adjust the trimmer on the lower left to match the buffer solution used. Note some buffer solutions are rated by temperature. Adjust your unit to match the corresponding buffer value based on it's temperature rating noted on the buffer bottle.
- Immerse the electrode into the pH 4.01 rinse solution then the pH 4.01 (or pH 9.18) buffer solution and swirl the electrode briefly.
- Allow the reading to stabilize (at least 1 minute) and then adjust its trimmer until the display matches the buffer solution value.
- The unit is now calibrated.

### **5.) pH Electrode Maintenance**

The electrode consists of a porous glass membrane. During transport bubbles may form inside the glass bulb and affect its accuracy. To correct this condition simply “shake down” the electrode as if it were a clinical thermometer.

The electrode is protected by plastic vessel filled with storage solution. Remove this vessel before use and replace it after use to protect your electrode. Add a couple drops of storage solution or pH 7.01 buffer to the vessel to protect the electrode. Do Not Store the Electrode in Water (DI or otherwise). Extended contact with water will deplete your electrode and reducing its life.

If the electrode is dry or has not been used for several weeks it should be reactivated by immersing it in storage solution or distilled water for several hours.

The difference in mV between measurements taken in pH7 and pH4 buffer solutions ranges from 171 to 176mV or pH electrodes working at temperatures of 20 – 25 °C. If this value does not result, check the following:

- The cable used for the connection to the pH meter must be intact and well seated.
- The connectors must be perfectly clean and dry
- If the electrode has been left for a long time with its bulb exposed to air, a process of dehydration takes place and in such a case the results indicated by the electrode become extremely slow and unstable. Leave the electrode immersed in storage solution or DI water over night to re-hydrate your electrode.
- Crystals may form on or around the glass bulb of the electrode. Simply rinse with DI water or in severe circumstances they may be removed by immersion for 5 minutes in each of the following:
  - i. HCL 0.1M, NaOH 0.1M, and once again in HCL 0.1M.
- Never touch your electrode. A film of organic oil or grease will effect its accuracy. If this occurs you may rinse the glass bulb with a 75% methanol solution, shake dry, and rinse with storage solution or DI water.
- Protein deposits (due for example to measurements of Milk, cheese, meat, etc) may be eliminated by treatment in pepsin and HCL solutions.
- Keep the protective cap of the electrode filled with storage solution (dilute Potassium Chloride <3%). This will assure your electrode is hydrated and extend it’s life.

### **6.) Warranty**

This instrument is guaranteed from defects in material and workmanship for a period of one year from the date of manufacture. If during this period repair or replacement is necessary and the damage is not due to negligence or erroneous operation, please return the unit to your dealer for repair or replacement (at dealers’ option).